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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.

042390.P7709

First Inventor or Application Identifier

Carl M. Ellison

Title

A PLATFORM AND METHOD FOR ESTABLISHING PROVABLE IDENTITIES WHILE MAINTAINING
PRIVACY

Express Mail Label No.

EL466332415US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents

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1. ☒ Fee Transmittal Form
(Submit an original, and a duplicate for fee processing)
2. ☒ Specification [Total Pages 12]
(preferred arrangement set forth below)
 - Descriptive title of the Invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
3. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 4]
4. Oath or Declaration [Total Pages 4]
 - a. ☒ Newly executed (original copy)
 - b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
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 - i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting
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see 37 CFR §§ 1.63(d)(2) and 1.33(b).

5. ☐ Microfiche Computer Program (Appendix)
6. Nucleotide and/or Amino Acid Sequence Submission
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ACCOMPANYING APPLICATION PARTS

7. ☒ Assignment Papers (cover sheet & document(s))
8. ☐ 37 C.F.R. § 3.73(b) Statement ☐ Power of Attorney
(when there is an assignee)
9. ☐ English Translation Document (if applicable)
10. ☐ Information Disclosure Statement (IDS)/PTO - 1449 ☐ Copies of IDS Citations
11. ☐ Preliminary Amendment
12. ☐ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
13. ☐ *Small Entity Statement(s) ☐ Statement filed in prior application,
Status still proper and desired
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Date

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Our Ref. No. 042390.P7709
Express Mail No.: EL466332415US

UNITED STATES PATENT APPLICATION

FOR

**A PLATFORM AND METHOD FOR ESTABLISHING PROVABLE
IDENTITIES WHILE MAINTAINING PRIVACY**

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A PLATFORM AND METHOD FOR ESTABLISHING PROVABLE IDENTITIES WHILE MAINTAINING PRIVACY

Field

5 This invention relates to the field of data security. In particular, the invention relates to a platform and method that protects an identity of the platform through creation and use of pseudonyms.

Background

10 Advances in technology have opened up many opportunities for applications that go beyond the traditional ways of doing business. Electronic commerce (e-commerce) and business-to-business (B2B) transactions are now becoming popular, reaching the global markets at a fast rate. Unfortunately, while electronic platforms like computers provide users with convenient and efficient
15 methods of doing business, communicating and transacting, they are also vulnerable for unscrupulous attacks. This vulnerability has substantially hindered the willingness of content providers from providing their content in a downloaded, digital format.

 Currently, various mechanisms have been proposed to verify the identity
20 of a platform. This is especially useful to determine if the platform features a “trusted” device; namely, the device is configured to prevent digital content from being copied in a non-encrypted format without authorization. One verification scheme involves the use of a unique serial number assigned to a platform for identification of that platform. Another verification scheme, performed either
25 independently from or cooperatively with the previously described verification scheme, involves the use of a permanent key pair. The permanent key pair includes (i) a unique public key that identifies the platform and (ii) a private key that is permanently stored in memory of the trusted device. The private key is confidential and is not provided outside the trusted device. However, these
30 verification schemes pose a number of disadvantages.

 For example, each of these verification schemes is still subject to data aggregation attacks. “Data aggregation” involves the collection and analysis of data transmitted from a platform over a period of time. Thus, the use of platform serial numbers and permanent keys for identification purposes has recently lead to
35 consumer privacy concerns. Also, for both verification mechanisms, a user cannot

easily and reliably control access to and use of the platform identity on a per-use basis.

BRIEF DESCRIPTION OF THE DRAWINGS

5 The features and advantages of the present invention will become apparent from the following detailed description of the present invention in which:

 Figure 1 is a block diagram of an illustrative embodiment of a system utilizing the present invention.

 Figure 2 is a block diagram of an illustrative embodiment of the trusted
10 logic employed within the first platform of Figure 1.

 Figure 3 is a flowchart of an illustrative embodiment describing allocation and use of a pseudonym produced within the first platform of Figure 1.

 Figures 4 and 5 are flowcharts of an illustrative embodiment of the production and certification of pseudonyms.

15

DETAILED DESCRIPTION

 The present invention relates to a platform and method for protecting the identity of the platform through the creation and use of pseudonyms. Herein, certain details are set forth in order to provide a thorough understanding of the
20 present invention. It is apparent to a person of ordinary skill in the art, however, that the present invention may be practiced through many embodiments other than those illustrated. Well-known circuits and cryptographic techniques are not set forth in detail in order to avoid unnecessarily obscuring the present invention.

 In the following description, terminology is used to discuss certain features
25 of the present invention. For example, a "platform" includes hardware and/or software that process information. Examples of a platform include, but are not limited or restricted to any of the following: a computer (e.g., desktop, a laptop, a hand-held, a server, a workstation, etc.); data transmission equipment (e.g., a router, switch, facsimile machine, etc.), wireless equipment (e.g., cellular base
30 station, telephone handset, etc.); or television set-top box. "Software" includes code that, when executed, performs a certain function. "Information" is defined as one or more bits of data, address, and/or control.

 With respect to cryptographic functionality, a "cryptographic operation" is an operation performed for additional security on information. These operations
35 may include encryption, decryption, hash computations, and the like. In certain cases, the cryptographic operation requires the use of a key, which is a series of

bits. For asymmetric key cryptography, a device is associated with unique, permanent key pair that includes a public key and a private key.

In addition, asymmetric key cryptography normally utilizes a root certificate. A "root certificate" is a public key at the origination of a digital certificate chain and provides a starting point for all subsequent digital certificates. In general, a "digital certificate" includes information used to authenticate a sender of information. For example, in accordance with CCITT Recommendation X.509: The Directory - Authentication Framework (1988), a digital certificate may include information (e.g., a key) concerning a person or entity being certified, namely encrypted using the private key of a certification authority. Examples of a "certification authority" include an original equipment manufacturer (OEM), a software vendor, a trade association, a governmental entity, a bank or any other trusted business or person. A "digital certificate chain" includes an ordered sequence of two or more digital certificates arranged for authorization purposes as described below, where each successive certificate represents the issuer of the preceding certificate.

A "digital signature" includes digital information signed with a private key of its signatory to ensure that the digital information has not been illicitly modified after being digitally signed. This digital information may be provided in its entirety or as a hash value produced by a one-way hash operation.

A "hash operation" is a one-way conversion of information to a fixed-length representation referred to as a "hash value". Often, the hash value is substantially less in size than the original information. It is contemplated that, in some cases, a 1:1 conversion of the original information may be performed. The term "one-way" indicates that there does not readily exist an inverse function to recover any discernible portion of the original information from the fixed-length hash value. Examples of a hash function include MD5 provided by RSA Data Security of Redwood City, California, or Secure Hash Algorithm (SHA-1) as specified a 1995 publication Secure Hash Standard FIPS 180-1 entitled "Federal Information Processing Standards Publication" (April 17, 1995).

Referring to Figure 1, a block diagram of an illustrative embodiment of a system 100 utilizing the present invention is shown. The system 100 comprises a first platform 110 and a second platform 120. First platform 110 is in communication with second platform 120 via a link 130. A "link" is broadly defined as one or more information-carrying mediums (e.g., electrical wire, optical fiber, cable, bus, or wireless signaling technology). When requested by the

user, first platform 110 generates and transmits a pseudonym public key 140 (described below) to second platform 120. In response, second platform 120 is responsible for certifying, when applicable, that pseudonym public key 140 was generated by a trusted device 150 within first platform 110.

5 Referring now to Figure 2, in one embodiment, trusted device 150 comprises hardware and/or protected software. Software is deemed “protected” when access control schemes are employed to prevent unauthorized access to any routine or subroutine of the software. More specifically, device 150 is one or more integrated circuits that prevents tampering or snooping from other logic.
10 The integrated circuit(s) may be placed in a single integrated circuit (IC) package or a multi-IC package. A package provides additional protection against tampering. Of course, device 150 could be employed without any IC packaging if additional protection is not desired.

Herein, device 150 comprises a processing unit 200 and a persistent
15 memory 210 (e.g., non-volatile, battery-backed random access memory “RAM”, etc.). Processing unit 200 is hardware that is controlled by software that internally processes information. For example, processing unit 200 can perform hash operations, perform logical operations (e.g. multiplication, division, etc.), and/or produce a digital signature by digitally signing information using the Digital
20 Signature Algorithm. Persistent memory 210 contains a unique asymmetric key pair 220 programmed during manufacture. Used for certifying pseudonyms, asymmetric key pair 220 includes a public key (PUKP1) 230 and a private key (PRKP1) 240. Persistent memory 210 may further include a public key 250 (PUKP2) of second platform 120, although it may be placed in volatile memory
25 (e.g., RAM, register set, etc.) within device 150 if applicable.

In this embodiment, device 150 further comprises a number generator 260 such as a random number generator or a pseudo-random number generator. Number generator 260 is responsible for generating a bit stream that is used, at least in part, to produce one or more pseudonyms. A “pseudonym” is an alias
30 identity in the form of an alternate key pair used to establish protected communications with another platform and to identify that its platform includes trusted device 150. The pseudonym also supports a challenge/response protocol and a binding of licensing, secrets and other access control information to the specific platform. It is contemplated, however, that number generator 260 may be
35 employed externally from device 150. In that event, the greater security would be

realized by platform 110 if communications between number generator 260 and device 150 were protected.

Referring to Figure 3, a flowchart of an illustrative embodiment describing allocation and use of a pseudonym is shown. To fully protect the user's privacy, the user should have positive control of the production, allocation and deletion of pseudonyms. Thus, in response to explicit user consent, a new pseudonym is produced (blocks 300 and 310). Also, to access information (e.g., label, public key, etc.) that identifies an existing pseudonym, explicit user consent is needed (blocks 320 and 330). Explicit user consent may be given by supplying a pass-phrase (e.g., series of alphanumeric characters), a token, and/or a biometric characteristic to the trusted device. For example, in one embodiment, a user pass-phrase may be entered through a user input device (e.g., a keyboard, mouse, keypad, joystick, touch pad, track ball, etc.) and transferred to the trusted device. In another embodiment, memory external to the logic may contain pseudonyms encrypted with a hash value of a user pass-phrase. Any of these pseudonyms can be decrypted for use by again supplying the user pass-phrase.

Once a pseudonym has been produced and allocated for use in communications with a remote platform, this pseudonym represents the persistent platform identity for that platform/platform communications, so long as the user chooses to retain the pseudonym (blocks 340, 350 and 360).

Referring now to Figures 4 and 5, flowcharts of an illustrative embodiment of the production and certification of pseudonyms are shown. Initially, upon receiving a request by the user, the pseudonym is produced by the device in coordination with a number (block 400). A pseudonym public key (PPUKP1) is placed in a digital certificate template (block 405). The digital certificate template may be internally stored within the first platform or provided by the second platform in response to a request for certification from the first platform. Thereafter, the digital certificate template undergoes a hash operation to produce a certificate hash value (block 410).

Thereafter, the certificate hash value undergoes a transformation similar to that described in U.S. Patent Nos. 4,759,063 and 4,759,064 to create a "blinded" certificate hash value (block 415). In particular, the certificate hash value is multiplied by a pseudo-random number (e.g., a predetermined number raised to a power that is pseudo-randomly select). The pseudo-random power is maintained in confidence within the first platform (e.g., placed in persistent memory 210 of Figure 2).

which the invention pertains are deemed to lie within the spirit and scope of the invention.

[illegible]

CLAIMS

What is claimed is:

1 1. A method comprising:
2 producing a pseudonym including a public pseudonym key within a
3 platform;
4 placing the public pseudonym key into a certificate template;
5 performing a hash operation on the certificate template to produce a
6 certificate hash value;
7 performing a transformation on the certificate hash value for transmission
8 from the platform;
9 receiving a signed result being a digital signature for the transformed
10 certificate hash value; and
11 performing an inverse transformation on the signed result to recover a
12 digital signature of the certificate hash value.

1 2. The method of claim 1, wherein the producing of the pseudonym
2 includes generating the public pseudonym key and a private pseudonym key
3 corresponding to the public pseudonym key.

1 3. The method of claim 1, wherein the placing of the public
2 pseudonym key into the certificate template includes writing the public
3 pseudonym key into a field of the certificate template.

1 4. The method of claim 1, wherein the performing of the
2 transformation comprises:
3 performing a logical operation on the certificate hash value using a
4 pseudo-random number to produce a value differing from the certificate hash
5 value.

1 5. The method of claim 4, wherein the pseudo-random number is a
2 predetermined value raised to an inverse power designated by a pseudo-random
3 value.

1 6. The method of claim 5, wherein the pseudo-random value is stored
2 in secure memory.

1 7. The method of claim 4, wherein the performing of the inverse
2 transformation comprises performing a logical operation on the signed result
3 using an inverse of the pseudo-random number.

1 8. The method of claim 1, wherein prior to receiving the digital
2 signature, the method comprises:
3 digitally signing a certification request, including the transformed
4 certificate hash value, with a private key of a first platform to produce a signed
5 certification request.

1 9. The method of claim 8, wherein prior to receiving the digital
2 signature, the method further comprises:
3 obtaining a device certificate being a digital certificate chain that includes
4 a public key of a first platform, to accompany the signed certificate request

1 10. The method of claim 9, wherein prior to receiving the digital
2 signature, the method further comprises:
3 transferring the signed certificate request and the device certificate to a
4 second platform.

1 11. The method of claim 11 further comprising:
2 storing the digital signature of the certificate hash value for use in
3 subsequent communications to a remotely located platform.

1 12. A device comprising:
2 a processing unit; and
3 a persistent memory including a first key pair and at least one pseudonym
4 for use in communications with a remotely located device and in identifying that a
5 platform containing the device is secure.

1 13. The device of claim 12, wherein the at least one pseudonym
2 includes a second key pair.

1 14. The device of claim 13, wherein the second key pair is erased after
2 a communication session with the remotely located device has concluded.

1 15. The device of claim 12 further comprising:
2 a number generator to assist in producing the at least one pseudonym.

1 16. A platform comprising:
2 a transceiver; and
3 a device in communication with the transceiver, the device including a
4 persistent memory to contain a permanent key pair, at least one pseudonym
5 generated internally within the device and a digital signature of a hash value of a
6 digital certificate chain that includes a public pseudonym key of the pseudonym.

1 17. The platform of claim 16, wherein the device further includes:
2 a processing unit to (i) write the public pseudonym key into a certificate
3 template, (ii) perform a hash operation on the certificate template to produce a
4 certificate hash value, (iii) to perform a transformation operation on the certificate
5 hash value.

1 18. The platform of claim 17, wherein the processing unit of the device
2 further produces a digital signature of at least the transformed certificate hash
3 value using a private key of the permanent key pair.

1 19. The platform of claim 16, wherein the processing unit of the device
2 further appending a device certificate with the digital signature of at least the
3 transformed certificate hash value.

1 20. The platform of claim 19, wherein the device certificate is the
2 digital certificate chain.

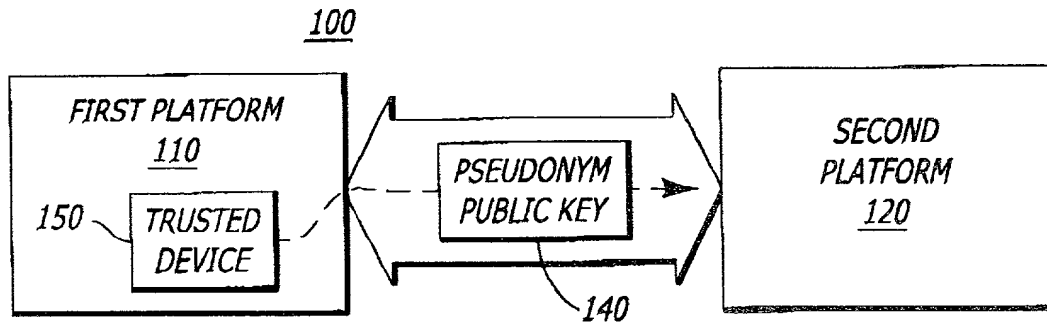
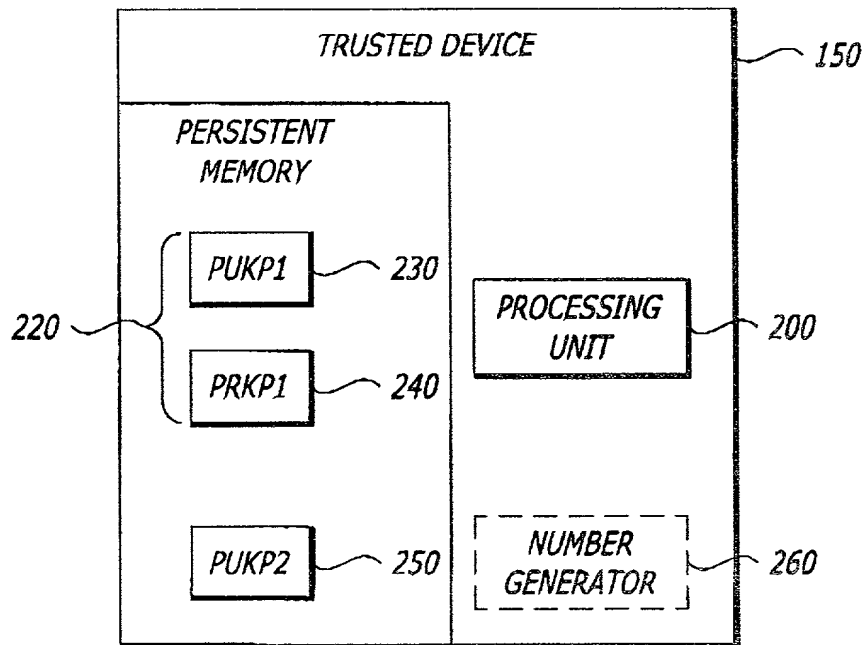
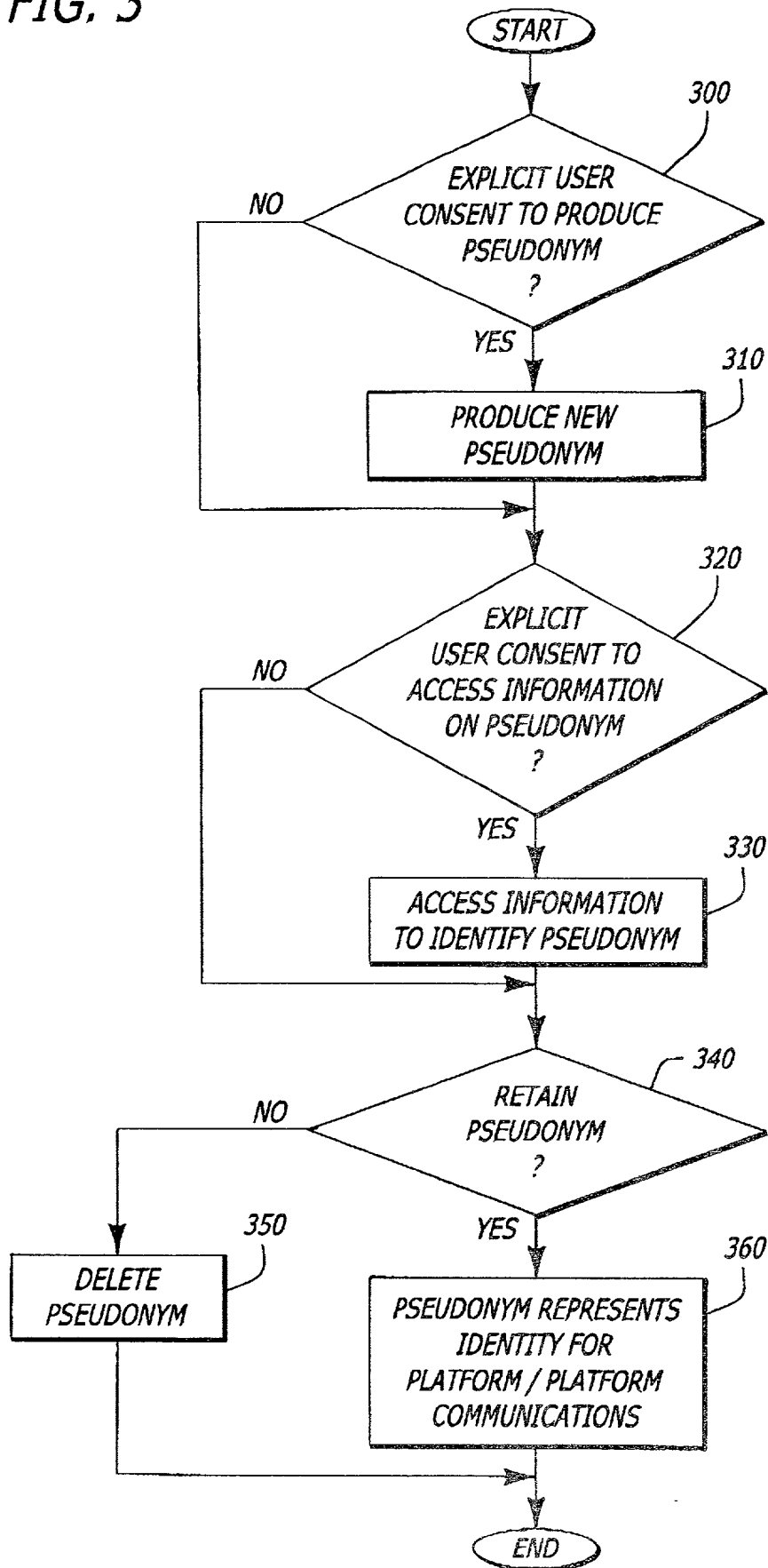
**FIG. 1****FIG. 2**

FIG. 3



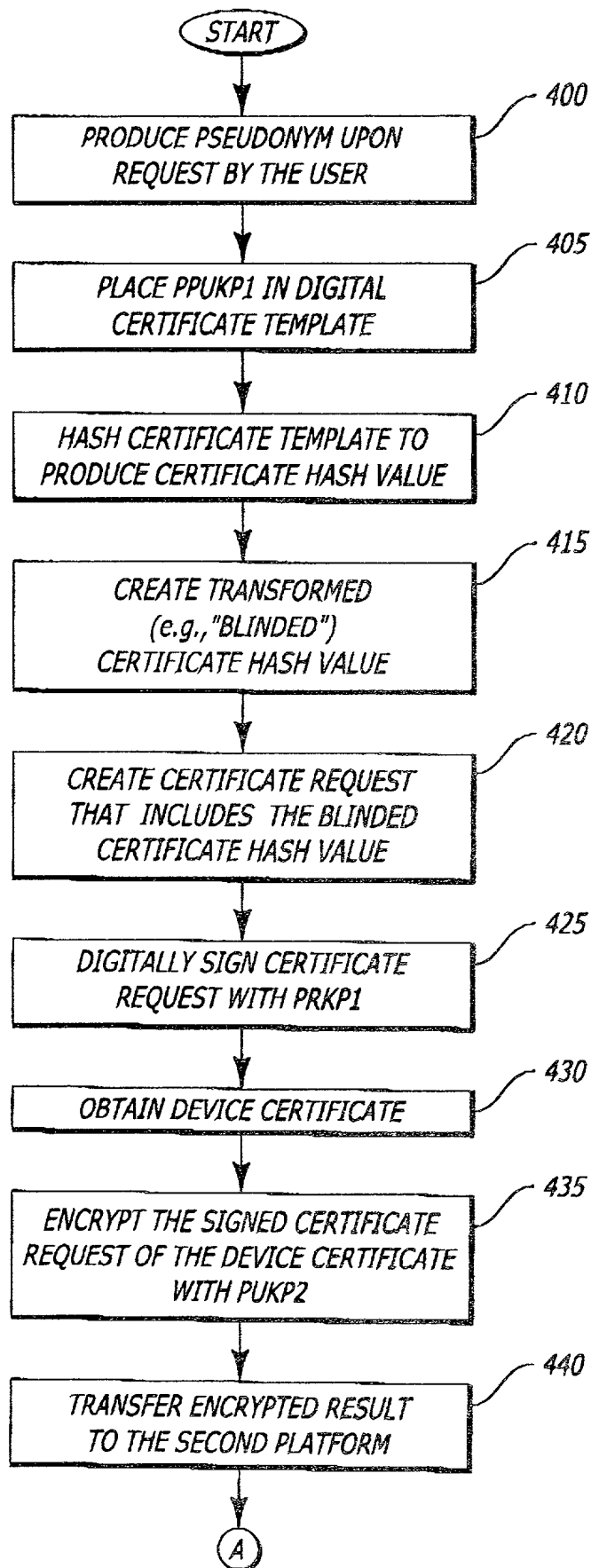


FIG. 4

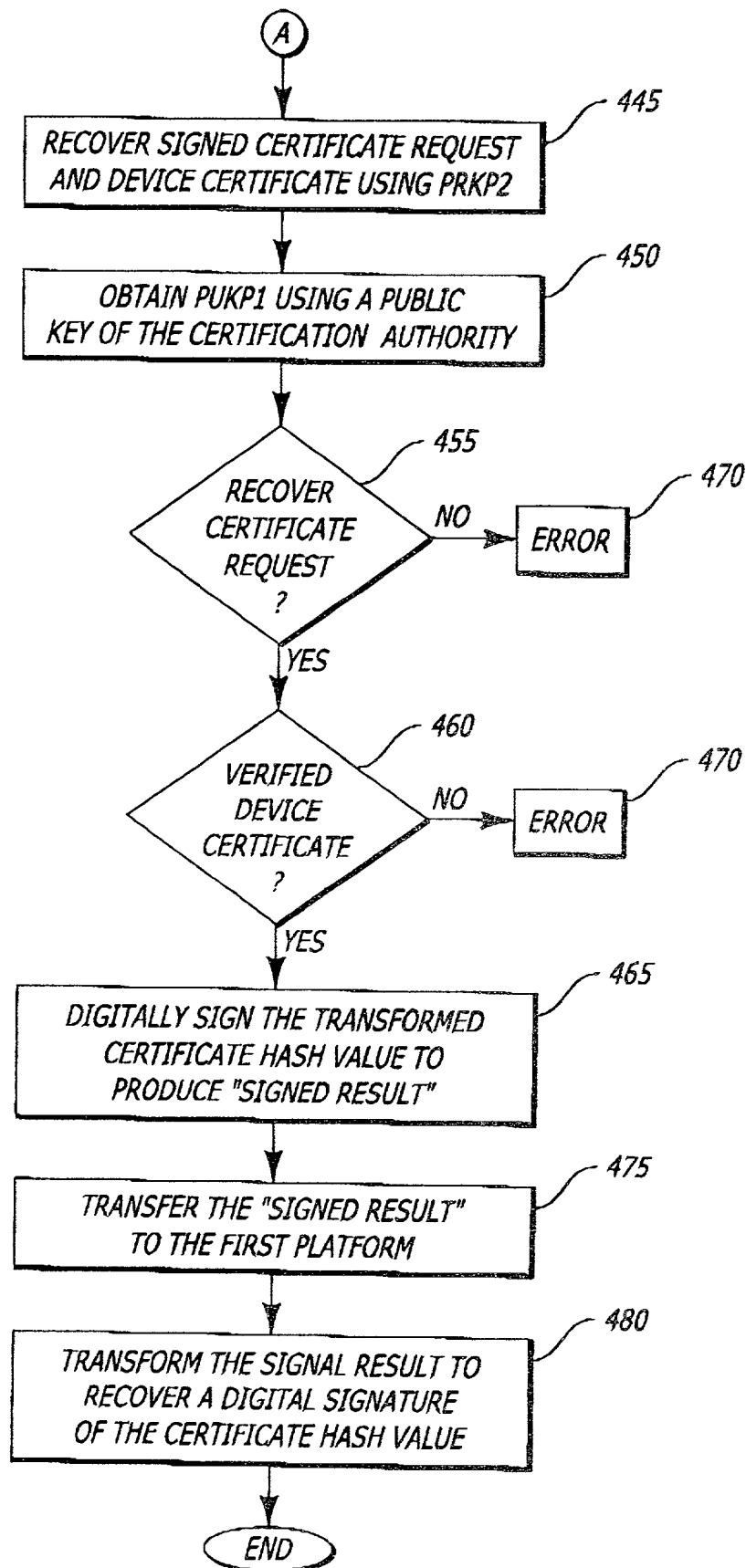


FIG. 5

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION (FOR INTEL CORPORATION PATENT APPLICATIONS)

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

A PLATFORM AND METHOD FOR ESTABLISHING PROVABLE IDENTITIES WHILE MAINTAINING PRIVACY

the specification of which

☒ is attached hereto.
☐ was filed on _____ as _____
 United States Application Number _____
 or PCT International Application Number _____
 and was amended on _____
 (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):

APPLICATION NUMBER	COUNTRY (OR INDICATE IF PCT)	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 37 USC 119
			<input type="checkbox"/> No <input type="checkbox"/> Yes
			<input type="checkbox"/> No <input type="checkbox"/> Yes
			<input type="checkbox"/> No <input type="checkbox"/> Yes

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

APPLICATION NUMBER	FILING DATE

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION NUMBER	FILING DATE	STATUS (ISSUED, PENDING, ABANDONED)

I hereby appoint the persons listed on Appendix A hereto (which is incorporated by reference and a part of this document) as my respective patent attorneys and patent agents, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to:

William W. Schaal, Reg. No. 39,018, BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN, LLP

(Name of Attorney or Agent)

12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025 and direct telephone calls to:

William W. Schaal, (714) 557-3800.

(Name of Attorney or Agent)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole/First Inventor (given name, family name)

Carl M. Ellison

Inventor's Signature

Carl M. Ellison

Date

8/22/08

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(City, State)

Citizenship USA

(Country)

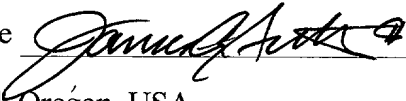
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Inventor's Signature



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Inventor's Signature

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Citizenship

(Country)

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Full Name of Fifth/Joint Inventor (given name, family name)

Inventor's Signature

Date

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(City, State)

Citizenship

(Country)

P. O. Address

APPENDIX A

I hereby appoint BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP, a firm including: William E. Alford, Reg. No. 37,764; Farzad E. Amini, Reg. No. 42,261; Amy M. Armstrong, Reg. No. 42,265; Aloysius T. C. AuYeung, Reg. No. 35,432; William Thomas Babbitt, Reg. No. 39,591; Carol F. Barry, Reg. No. 41,600; Jordan Michael Becker, Reg. No. 39,602; Bradley J. Berezna, Reg. No. 33,474; Michael A. Bernadieu, Reg. No. 35,934; Roger W. Blakely, Jr., Reg. No. 25,831; R. Alan Burnett, Reg. No. 46,149; Gregory D. Caldwell, Reg. No. 39,926; Ronald C. Card, Reg. No. 44,587; Thomas M. Coester, Reg. No. 39,637; Donna Jo Coningsby, Reg. No. 41,684; Michael Anthony DeSanctis, Reg. No. 39,957; Daniel M. De Vos, Reg. No. 37,813; Robert Andrew Diehl, Reg. No. 40,992; Matthew C. Fagan, Reg. No. 37,542; Tarek N. Fahmi, Reg. No. 41,402; George L. Fountain, Reg. No. 36,374; Paramita Ghosh, Reg. No. 42,806; James Y. Go, Reg. No. 40,621; James A. Henry, Reg. No. 41,064; Willmore F. Holbrow III, Reg. No. 41,845; Sheryl Sue Holloway, Reg. No. 37,850; George W. Hoover II, Reg. No. 32,992; Eric S. Hyman, Reg. No. 30,139; William W. Kidd, Reg. No. 31,772; Sang Hui Kim, Reg. No. 40,450; Walter T. Kim, Reg. No. 42,731; Eric T. King, Reg. No. 44,188; Erica W. Kuo, Reg. No. 42,775; Joseph Lutz, Reg. No. 43,765; Michael J. Mallie, Reg. No. 36,591; Paul A. Mendonsa, Reg. No. 42,879; Clive D. Menezes, Reg. No. 45,493; Darren J. Milliken, Reg. No. 42,004; Chun M. Ng, Reg. No. 36,878; Thien T. Nguyen, Reg. No. 43,835; Thinh V. Nguyen, Reg. No. 42,034; Dennis A. Nicholls, Reg. No. 42,036; Lisa A. Norris, Reg. No. 44,976; Daniel E. Ovanezian, Reg. No. 41,236; William F. Ryann, Reg. No. 44,313; James H. Salter, Reg. No. 35,668; William W. Schaal, Reg. No. 39,018; James C. Scheller, Reg. No. 31,195; Jeffrey S. Smith, Reg. No. 39,377; Maria McCormack Sobrino, Reg. No. 31,639; Stanley W. Sokoloff, Reg. No. 25,128; Judith A. Szepesi, Reg. No. 39,393; Vincent P. Tassinari, Reg. No. 42,179; Edwin H. Taylor, Reg. No. 25,129; Joseph A. Twarowski, Reg. No. 42,191; Lester J. Vincent, Reg. No. 31,460; Glenn E. Von Tersch, Reg. No. 41,364; John Patrick Ward, Reg. No. 40,216; Charles T. J. Weigell, Reg. No. 43,398; James M. Wu, Reg. No. 45,241; Steven D. Yates, Reg. No. 42,242; and Norman Zafman, Reg. No. 26,250; my attorneys; and Andrew C. Chen, Reg. No. 43,544; Justin M. Dillon, Reg. No. 42,486; and John F. Travis, Reg. No. 43,203; my patent agents, of BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP, with offices located at 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025, telephone (714) 557-3800, and Alan K. Aldous, Reg. No. 31,905; Robert D. Anderson, Reg. No. 33,826; Joseph R. Bond, Reg. No. 36,458; Richard C. Calderwood, Reg. No. 35,468; Jeffrey S. Draeger, Reg. No. 41,000; Cynthia Thomas Faatz, Reg. No. 39,973; Sean Fitzgerald, Reg. No. 32,027; John N. Greaves, Reg. No. 40,362; Seth Z. Kalson, Reg. No. 40,670; David J. Kaplan, Reg. No. 41,105; Charles A. Mirho, Reg. No. 41,199; Leo V. Novakoski, Reg. No. 37,198; Naomi Obinata, Reg. No. 39,320; Thomas C. Reynolds, Reg. No. 32,488; Kenneth M. Seddon, Reg. No. 43,105; Mark Seeley, Reg. No. 32,299; Steven P. Skabrat, Reg. No. 36,279; Howard A. Skaist, Reg. No. 36,008; Steven C. Stewart, Reg. No. 33,555; Raymond J. Werner, Reg. No. 34,752; Robert G. Winkle, Reg. No. 37,474; and Charles K. Young, Reg. No. 39,435; my patent attorneys, and Thomas Raleigh Lane, Reg. No. 42,781; Calvin E. Wells, Reg. No. P43,256; Peter Lam, Reg. No. 44,855; and Gene I. Su, Reg. No. 45,140; my patent agents, of INTEL CORPORATION; and James R. Thein, Reg. No. 31,710, my patent attorney; with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.